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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR		ATTORNEY DOCKET NO.
07/313,911	02/23/89	SHEPHERD	A	UTSK097BAH

EXAMINER

ARNOLD, WHITE & DURKEE
P.O. BOX 4433
HOUSTON, TX 77210

ART UNIT	PAPER NUMBER
255	6

DATE MAILED: 04/03/90

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892. ✓
2. ☒ Notice re Patent Drawing, PTO-948. ✓
3. ☒ Notice of Art Cited by Applicant, PTO-1449. ✓
4. ☐ Notice of Informal Patent Application, Form PTO-152
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____

Part II SUMMARY OF ACTION

1. ☒ Claims 1 - 14 are pending in the application.

   Of the above, claims _____ are withdrawn from consideration.

2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1 - 14 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☒ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____. has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application apppears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless-
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one (1) year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claim 14 is rejected under 35 U.S.C. 102(a) and (b) as being anticipated by Anderson et al.

See figure 1, page 176. There is provided a controllable source of monochromatic light (section 3.3, page 178) and a cuvette for holding a sample of whole, undiluted blood; see page 174 for a discussion of the use of such tests with whole undiluted/blood. The

device of Anderson et al was used with an optical absorbance path through the sample of .011 cm, or 110 micrometers, which is in the instant disclosed range of 80 to 150 micrometers disclosed as being the range which minimizes the effect of light scattering. There is a light detector which is positioned to receive and detect light from the source of light passing through the sample; the detector is positioned and has a light detecting area which minimizes the effect of length scattering by the sample. The "light detector" either can be viewed as including the integrating sphere or as not, in either case the claim does not exclude an optical means, such as the integrating sphere, being a part of the apparatus.

Claims 1,2 and 6 through 14 are rejected under 35 U.S.C. 103 as being unpatentable over Anderson et al.

See the discussion of the Anderson et al reference above. The wavelengths used by Anderson et al, in the range from 500 to 620 nanometers, and in particular 505,520, 530 and 560 nanometers (page 179) is virtually identical with the range disclosed on page 7 of the instant specification, which runs from 506 to 620 nanometers, which are disclosed as being those which minimize the effect of radiation scattering and maximize radiation absorbance of blood. Of the particular wavelengths disclosed on page 179 of the reference two (520 and 560 nanometers) are the same as specific wavelengths mentioned on page 7 of the instant specification, and a

third (505 nanometers) differs from another instant disclosed wavelength (506 nanometers) by only one nanometer.

The use of such optical density measurements are known to be usable to calculate blood components; the Anderson et al reference makes reference to the use of such to calculate oxygen saturation (page 182, section 4.2. first sentence, for example). It would have been obvious to use measurements from such an instrument to calculate blood constituents because such use of optical absorbances for such calculations is known and such a use is at least suggested by the Anderson reference in its mention of the use of the data in oxygen situration measurement.

While Anderson et al used a spectrophotometer to generate the particular wavelengths of interest other known methods of generating the desired wavelengths, such as a tunable laser, interference filters or the like would have been obvious because it is the provision of the particular wavelengths of interest, and not the means for providing them, which provides the data of interest.

Claims 3 through 5 are rejected under 35 U.S.C. 103 as being unpatentable over Anderson et al. as applied to claim 1 above, and further in view of Shibata.

Anderson et al discusses the problem of light scatter, and uses a detector arrangement, with an integrating sphere, to capture substantially all of the

light which passes through the sample in a generally forward direction. It is known that this same capturing of substantially all forwardly directed light can be achieved by using a large detector placed close to the sample; see figures 2A,2B and 4 of Shibata et al. and column 3, lines 17 through 27. The use of such a large close detector would have been obvious because it is a known alternative method for obtaining the same desired result and does not require the additional presence of an integrating sphere.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to R.A. Rosenberger whose telephone number is (703) 557-4347.

Any inquiry of a general nature, or relating to the status of this application, should be directed to the Group receptionist whose telephone number is (703) 557-3311.

Rosenberger/rk
3/10/90

RICHARD A. ROSENBERGER
EXAMINER
ART UNIT 255